

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A process for preparing metal salt nanoparticles in a liquid phase reaction, comprising ~~synthesizing mixing components of the nanoparticles in a synthesis mixture and growing the nanoparticles during a synthesis period, said process further comprising adding a modifying reagent to the synthesis mixture within the synthesis period, with the modifying reagent exhibiting~~comprising a functional property which is suitable for a subsequent use of the nanoparticles after the synthesizing has been concluded first functional group for coupling to the nanoparticles and a second functional group for binding to further molecules.
2. (Previously Presented) The process as claimed in claim 1, wherein the metal salt nanoparticles are substances which are selected from the group consisting of the halides, the alkaline earth metal sulfates, the phosphates and halophosphates, the borates, the vanadates, the aluminates, the silicates, the tungstates, the molybdates and the germanates, all of which can also, in addition, be doped with one or more elements of the lanthanides and/or Mn, Ag, Cu, Pb, Bi, Cr, Sn or Sb.

3. (Currently Amended) The process as claimed in claim 1, wherein the metal salt nanoparticles are substances selected from the group consisting of:

- a) XY_2 ($X = \text{Mg, Ca, Sr, Ba}$; $Y = \text{F, Cl, I}$), $\text{CaF}_2:\text{Eu(II)}$, $\text{BaF}_2:\text{Eu}$, $\text{BaMgF}_4:\text{Eu}$,
 $\text{LiBaF}_3:\text{Eu}$, $\text{SrF}_2:\text{Eu}$, $\text{SrBaF}_2:\text{Eu}$, $\text{CaBr}_2:\text{Eu-SiO}_2$, $\text{CaCl}_2:\text{Eu}$, $\text{CaCl}_2:\text{Eu-SiO}_2$,
 $\text{CaCl}_2:\text{Eu,Mn-SiO}_2$, $\text{CaI}_2:\text{Eu}$, $\text{CaI}_2:\text{Eu,Mn}$, $\text{KMgF}_3:\text{Eu}$, $\text{SrF}_2:\text{Eu(II)}$, $\text{BaF}_2:\text{Eu(II)}$,
 YF_3 , NaYF_4 ,
- b) XSO_4 ($X = \text{Mg, Ca, Sr, Ba}$), $\text{SrSO}_4:\text{Eu}$, $\text{SrSO}_4:\text{Eu,Mn}$, $\text{BaSO}_4:\text{Eu}$, $\text{BaSO}_4:\text{Eu,Mn}$,
 CaSO_4 , $\text{CaSO}_4:\text{Eu}$, $\text{CaSO}_4:\text{Eu,Mn}$, and also in each case mixed alkaline earth
metal sulfates, ~~optionally~~ alone or in combination with magnesium,
- c) $\text{CaPO}_4:\text{Ce,Mn}$, $\text{Ca}_5(\text{PO}_4)_3\text{Cl}:\text{Ce,Mn}$, $\text{Ca}_5(\text{PO}_4)_3\text{F}:\text{Ce,Mn}$, $\text{SrPO}_4:\text{Ce,Mn}$,
 $\text{Sr}_5(\text{PO}_4)_3\text{Cl}:\text{Ce,Mn}$, $\text{Sr}_5(\text{PO}_4)_3\text{F}:\text{Ce,Mn}$, this also codoped with Eu(II) and Eu,Mn ,
 $\alpha\text{-Ca}_3(\text{PO}_4)_2:\text{Eu}$; $\beta\text{-Ca}_3(\text{PO}_4)_2:\text{Eu,Mn}$; $\text{Ca}_5(\text{PO}_4)_3\text{Cl}:\text{Eu}$; $\text{Sr}_5(\text{PO}_4)_3\text{Cl}:\text{Eu}$;
 $\text{Ba}_{10}(\text{PO}_4)_6\text{Cl}:\text{Eu}$; $\text{Ba}_{10}(\text{PO}_4)_6\text{Cl}:\text{Eu,Mn}$, $\text{Ca}_2\text{Ba}_2(\text{PO}_4)_3\text{Cl}:\text{Eu}$; $\text{Ca}_5(\text{PO}_4)_3\text{F}:\text{Eu}^{2+}\text{X}^{3+}$;
 $\text{Sr}_5(\text{PO}_4)_3\text{F}:\text{Eu}^{2+}\text{X}^{3+}$ ($\text{X} = \text{Nd, Er, Ho, Tb}$); $\text{Ba}_5(\text{PO}_4)_3\text{Cl}:\text{Eu}$; $\beta\text{-Ca}_3(\text{PO}_4)_2:\text{Eu}$;
 $\text{CaB}_2\text{P}_2\text{O}_9:\text{Eu}$; $\text{CaB}_2\text{P}_2\text{O}_9:\text{Eu}$; $\text{Ca}_2\text{P}_2\text{O}_7:\text{Eu}$; $\text{Ca}_2\text{P}_2\text{O}_7:\text{Eu,Mn}$; $\text{Sr}_{10}(\text{PO}_4)_6\text{Cl}_2:\text{Eu}$; (Sr, Ca, Ba, Mg) $_{10}(\text{PO}_4)_6\text{Cl}_2:\text{Eu}$; $\text{LaPO}_4:\text{Ce}$; CePO_4 ,
- d) LaBO_3 ; $\text{LaBO}_3:\text{Ce}$; $\text{ScBO}_3:\text{Ce}$; $\text{YAlBO}_3:\text{Ce}$; $\text{YBO}_3:\text{Ce}$; $\text{Ca}_2\text{B}_5\text{O}_9\text{Cl}:\text{Eu}$;
 $x\text{EuO}_y\text{Na}_2\text{OzB}_2\text{O}_3$,

- e) YVO_4 , $\text{YVO}_4\text{:Eu}$, $\text{YVO}_4\text{:Dy}$, $\text{YVO}_4\text{:Sm}$, $\text{YVO}_4\text{:Bi}$, $\text{YVO}_4\text{:Bi,Eu}$, $\text{YVO}_4\text{:Bi,Dy}$,
 $\text{YVO}_4\text{:Bi,Sm}$, $\text{YVO}_4\text{:Tm}$, $\text{YVO}_4\text{:Bi,Tm}$, GdVO_4 , $\text{GdVO}_4\text{:Eu}$, $\text{GdVO}_4\text{:Dy}$,
 $\text{GdVO}_4\text{:Sm}$, $\text{GdVO}_4\text{:Bi}$, $\text{GdVO}_4\text{:Bi,Eu}$, $\text{GdVO}_4\text{:Bi,Dy}$, $\text{GdVO}_4\text{:Bi,Sm}$,
- f) $\text{MgAl}_2\text{O}_4\text{:Eu}$, $\text{CaAl}_2\text{O}_4\text{:Eu}$, $\text{SrAl}_2\text{O}_4\text{:Eu}$, $\text{BaAl}_2\text{O}_4\text{:Eu}$, $\text{LaMgAl}_{11}\text{O}_{19}\text{:Eu}$;
 $\text{BaMgAl}_{10}\text{O}_{17}\text{:Eu}$, $\text{BaMgAl}_{10}\text{O}_{17}\text{:Eu, Mn}$, $\text{CaAl}_{12}\text{O}_{19}\text{:Eu}$, $\text{SrAl}_{12}\text{O}_{19}\text{:Eu}$;
 $\text{SrMgAl}_{10}\text{O}_{17}\text{:Eu}$, $\text{Ba}(\text{Al}_2\text{O}_3)_6\text{:Eu}$, $(\text{Ba,Sr})\text{MgAl}_{10}\text{O}_{17}\text{:Eu, Mn}$, $\text{CaAl}_2\text{O}_4\text{:Eu,Nd}$,
 $\text{SrAl}_2\text{O}_4\text{:Eu, Dy}$, $\text{Sr}_4\text{Al}_{14}\text{O}_{25}\text{:Eu,Dy}$,
- g) $\text{BaSrMgSi}_2\text{O}_7\text{:Eu}$, $\text{Ba}_2\text{MgSiO}_7\text{:Eu}$, $\text{BaMg}_2\text{Si}_2\text{O}_7\text{:Eu}$, $\text{CaMgSi}_2\text{O}_6\text{:Eu}$;
 $\text{SrBaSiO}_4\text{:Eu}$, $\text{Sr}_2\text{Si}_3\text{O}_8\text{:SrCl}_2\text{:Eu}$, $\text{Ba}_5\text{SiO}_4\text{Br}_6\text{:Eu}$, $\text{Ba}_3\text{SiO}_4\text{Cl}_6\text{:Eu}$;
 $\text{Ca}_2\text{MgSi}_2\text{O}_7\text{:Eu}$, $\text{CaAl}_2\text{Si}_2\text{O}_8\text{:Eu}$, $\text{Ca}_{1.5}\text{Sr}_{0.5}\text{MgSi}_2\text{O}_7\text{:Eu}$, $(\text{Ca,Sr})_2\text{MgSi}_2\text{O}_7\text{:Eu}$,
 $\text{Sr}_2\text{LiSiO}_4\text{F:E u}$,
- h) X_3WO_6 ($\text{X} = \text{Mg, Ca, Sr, Ba}$), X_2WO_4 ($\text{X} = \text{Li, Na, K, Rb, Cs}$), XMoO_4 ($\text{X} = \text{Mg, Ca, Sr, Ba}$) and also polymolybdates or polytungstates and/or the salts of the corresponding hetero- or isopoly acids,
- i) Zn_2GeO_4 ,
- j) the following compounds: $\text{AlnO}_2\text{:Yb, Er}$ ($\text{A} = \text{Li, Na}$; $\text{Ln} = \text{Gd, Y, Lu}$);
 $\text{Ln}_2\text{O}_3\text{:Yb, Er}$ ($\text{Ln} = \text{La, Gd, Y, Lu}$); $\text{LnAO}_4\text{:Yb, Er}$ ($\text{Ln} = \text{La, Y}$; $\text{A} = \text{P, V, As, Nb}$); $\text{Ca}_3\text{Al}_2\text{Ge}_3\text{O}_{12}\text{:Er}$; $\text{Gd}_2\text{O}_2\text{S:Yb, Er}$; $\text{La}_2\text{S:Yb,Er}$,

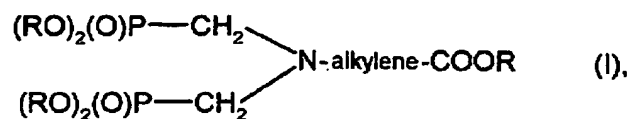
all of which ~~can also, in addition, be~~ are undoped or doped with one or more elements of the lanthanides and/or Mn, Ag, Cu, Pb, Bi, Cr, Sn or Sb within a host lattice.

4. (Currently Amended) The process as claimed in claim 2, ~~wherein the concentration of~~ doping elements are present in a host lattice ~~is at a concentration~~ between 10^{-5} mol% and 50 mol%.

5. (Canceled)

6. (Currently Amended) The process as claimed in claim 1, wherein the modifying reagent ~~also~~ exhibits a growth-controlling function in order to selectively control both the growth of the nanoparticles and the functionality of ~~the~~ a surface of the nanoparticles, by means of binding to the surface of the nanoparticles ~~surface~~.

7. (Currently Amended) The process as claimed in claim 1, wherein ~~use is made, as the~~ modifying reagent, ~~of~~ is a pentaalkyl iminobis(methylenephosphono)carboxylate of the formula I:



where

R is a C₁-C₄-alkyl radical, and

alkylene is a C₁-C₂₂-alkylene radical or C₇-C₂₀-alkylenearylene radical, which can be linear or branched and can, in addition, carry, as additional substituents, halogen atoms, COOR groups, alkoxy groups, bis(dialkoxyphosphorylmethyl)amino groups or aryl radicals.

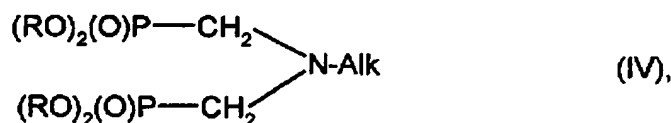
8. (Currently Amended) The process as claimed in claim 1, wherein ~~use is made, as the~~ modifying reagent, of is a pentaethyl or a pentaisopropyl iminobis(methylenephosphono)undecanoate.

9. (Currently Amended) The process as claimed in claim 1, wherein ~~use is made, as the~~ modifying reagent, of is a pentaethyl or pentaisopropyl iminobis(methylene-phosphono)caproate.

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10. (Currently Amended) The process as claimed in claim 1, wherein the synthesis period comprises a period time which elapses ~~during the synthesis period~~ before the modifying reagent is added, and this period of time is directly proportional to a planned average size of the nanoparticles.

11. (Currently Amended) The process as claimed in claim 1, wherein the modifying agent is a compound~~Method of using of compounds of the formula IV as modifying reagent for preparing metal salt nanoparticles in accordance with the process as claimed in claim 1:~~



where

R ~~is a C₁-C₄-alkyl~~ ~~has the meaning given above with regard to formula (I), and~~

Alk is a C₄-C₂₂-alkyl radical or C₇-C₃₀ aralkyl or arylalkyl radical.

12. (Currently Amended) Method of ~~using the~~ marking a biologically relevant molecule comprising coupling nanoparticles which are prepared as claimed in claim 1 ~~for coupling to the~~ biologically relevant molecules ~~for the purpose of marking them.~~
13. (Currently Amended) Method of ~~using the~~ preparing a nanoparticle-coupled-application-specific molecule comprising coupling nanoparticles which are prepared as claimed in claim 1 ~~for a subsequent intended application which requires the nanoparticles to be coupled to an~~ application-specific molecules, with the coupling being selectively promoted or made possible by means of one of the functional properties of the modifying reagent.
14. (Currently Amended) The process as claimed in claim 2, wherein ~~the concentration of~~ doping elements are present in a host lattice ~~is at a concentration~~ between 0.01 mol% and 30 mol%.
15. (Currently Amended) The process as claimed in claim 2, wherein ~~the concentration of~~ doping elements are present in a host lattice ~~is at a concentration~~ between 0.1 mol% and 20 mol%.

16. (New) The process as claimed in claim 1, wherein the modifying reagent comprises a third functional group.

17. (New) The process as claimed in claim 1, wherein the functional groups are esters, carbonyl, carboxyl or amino groups.

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